



Maintaining the Passenger Experience at Airports Under Increased Landside Security Requirements

Summary of a Research Study
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TH Airport Consulting

- Independent consultancy for **Planning and Optimization of Airports** with a focus on enhancing **Passenger Experience, Operational Efficiency & Security**
- Continuous work and research on the Passenger Experience
- Contributor to the **ACI EUROPE “Guidelines for Passenger Services at European Airports”**
- **2015 ACI EUROPE World Business Partner Award**

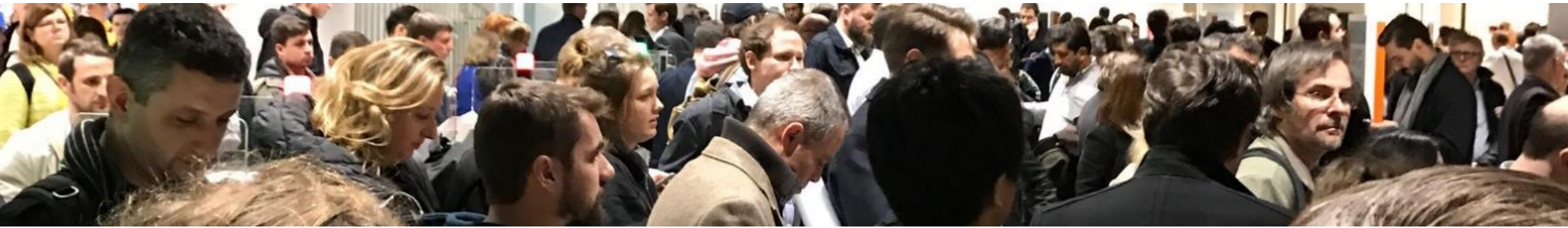
The Study

Master thesis by Martin Neuser:

- Management Studies, *Kühne Logistics University*, Hamburg
- Supervised by TH Airport Consulting



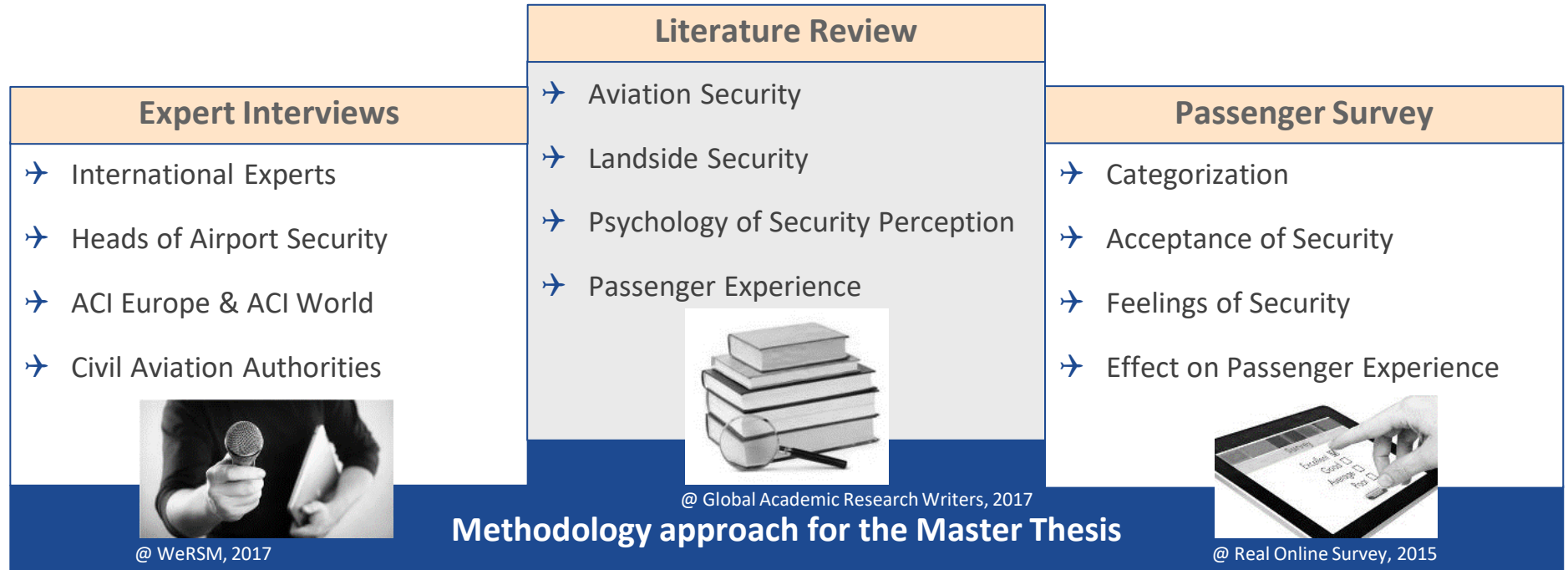
International Airports Increasingly Face Threats in Their Publicly Accessible Landside Areas



- ➔ Horrific terrorist attacks in the course of 2016 constitute the **necessity to rethink landside security** such as the attacks at *Brussels Zaventem Airport* and *Istanbul Atatürk Airport* leaving altogether 73 people dead and more than 300 wounded
- ➔ Initially introduced **mitigating measures** such as terminal entrance checks did not **prevent** the Istanbul attacks but in the sequel **even increase the risk of additional congestions, as well as the overall cost and discomfort for passengers**
- ➔ Airports find themselves in the dilemma **of balancing the must to increase the security level at their landside areas and to give satisfaction to their visitors and passengers at the same time.**

Rethink and elaborate
landside security
initiatives to achieve
both, an **increased
level of security and
the maintenance of the
passenger experience
at the same time!**

Applied Research Depicts a Combination of Several Approaches

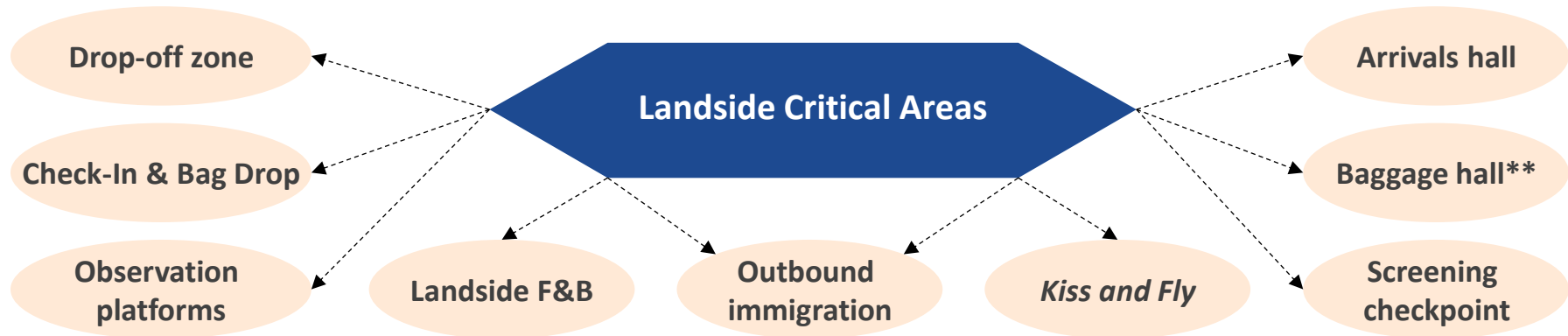


- The study's overall goal is to **investigate landside security measures at airports and analyze their relevance for the passenger experience**
- To provide **recommendations on how to design and manage the landside measures, in order to comply with new requirements by thoroughly considering the airport's premises, processes and people**
- To give **managerial implications and best practices** for the appropriate **implementation of measures without compromising the experience of passengers at airports**

The Landside is a Vulnerable Area of High Importance for the Airport and the Passengers



- The airport's landside is **the travel journey's first essential physical point of contact with the airport system**
- Passengers spend in average approx. **40 minutes on the landside** incl. **45% of this time** related to leisure activities*
- The publicly accessible landside hosts significant **critical assets & bottlenecks** that refer to unique vulnerabilities



- Major threats may occur at these locations: **Improvised explosive devices (IED)**, either **person borne (PBIED)** or **vehicle borne (VBIED)**, **vehicles abused as weapons (VAAW)**, as well as **general arms, any forms of chemical, biological or radiological (CBRN) attacks** and **insider threats**

The International Airport Community Faces new Resolutions and Amendments to Annex 17



INTERNATIONAL CIVIL AVIATION ORGANIZATION
A United Nations Specialized Agency

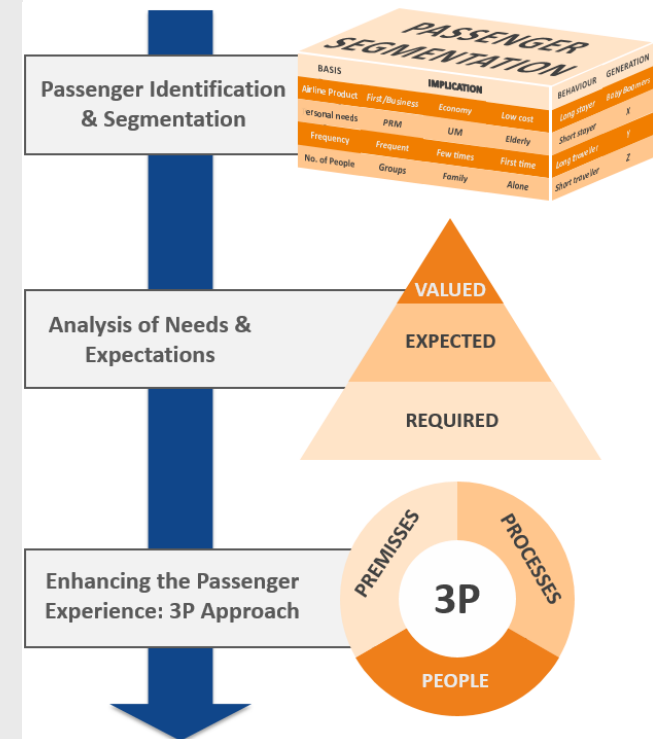


- ➔ **Annex 17 – *Safeguarding Civil Aviation Against Acts of Unlawful Interference*** as the industry's security standard
- ➔ ICAO considered particular **amendments to Annex 17** first in the aftermath of its **208th session on May 18, 2016**:
 - ➔ Each member state to consider the **implementation of risk-based security measures**, e.g. behavior detection
 - ➔ **Landside areas to be clearly defined** and provided with thorough security measures...
 - ➔ ... accompanied by an admission and identification of responsibilities related to landside security **within each single state's national civil aviation security program**.
- ➔ **UN Resolution 2309 (2016)**, adopted by the Security Council on September 22, 2016, commits states to **"ensure that effective, risk-based measures are in place at the airports within their jurisdiction**, including thoroughly enhanced screening, security checks, and facility security, to detect and deter terrorist attacks against civil aviation"
- ➔ Moreover, states are meant **"to review and assess such measures regularly and thoroughly**, to ensure that they reflect the ever-evolving threat picture and are **in accordance with ICAO's standards and recommended practices"**

Passenger Experience as one of the Last Levers for Airports to Exercise Competitive Advantages



- ➔ **Maintaining the Passenger Experience** is a primary objective of the airport business
- ➔ Positive and negative experiences impact the **entire travel journey**
- ➔ **Exceptional experiences lead to satisfaction & loyalty** and make the airport **more attractive** for airlines and passengers at the same time
- ➔ **Landside security bears the risk to impinge on the passenger experience** and needs to be managed with due regard to potentially harming effects
- ➔ **Need to meet customers' functional & emotional expectations** when they experience security measures at the Airport
- ➔ **Security measures regarding all 3P (premises, processes, people) need to be optimized** for a good passenger experience



Maintaining the Passenger Experience Means Minding Subjective Security Feelings



- ➔ **Security is both a feeling and a reality**
- ➔ Passengers assess security **based upon perceived subjectivity** which is influenced by evolutionary risk heuristics and an **unconscious weighing of gains and losses of security measures**
- ➔ Landside security measures **affect passengers with regard to 5 interference criteria**
- ➔ Here, people accept those **security measures most which impinge on their privacy (i.e. largely referring to standard observations) and comfort** as opposed to **those that impinge on their flexibility, integrity or anonymity.**
- ➔ According to the so-called **prospect theory**, a sure gain is commonly perceived better than a chance at a greater gain, and a sure loss is worse than the respective chance at a greater loss, **people are risk-averse**

X

*Ranking of acceptance' likelihood

Privacy

1*

- e.g. observations by police, security guards or dogs

Comfort

2*

- e.g. reduction of seating possibilities, longer distances & waiting time

Flexibility

3*

- e.g. longer travel time, time-consuming processes, earlier arrival necessary

Integrity

4*

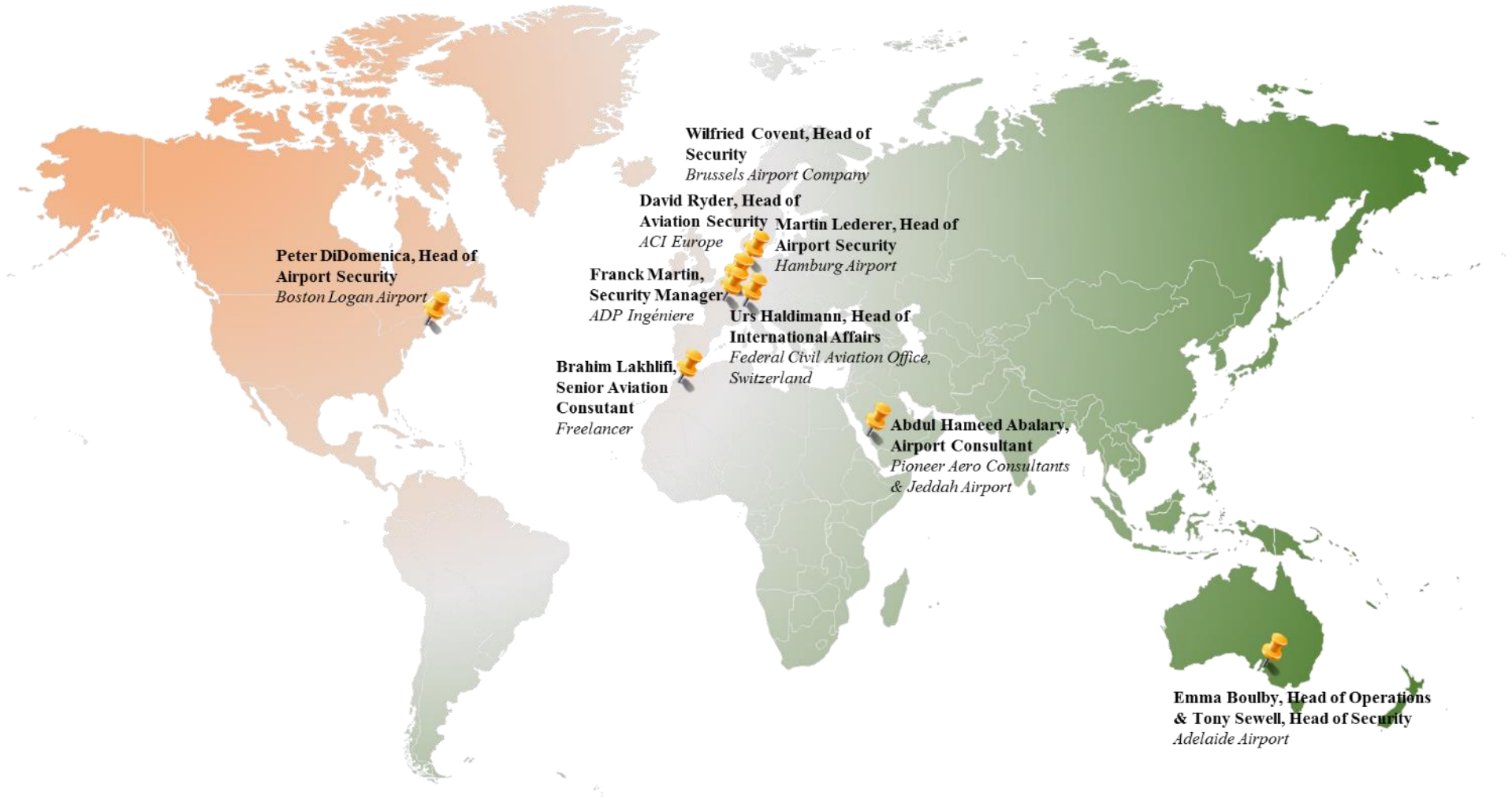
- e.g. body or luggage search, scanning & making contours visible

Anonymity

5*

- e.g. verifying & storing passenger's face, name, data, motion profile

Maintaining the Passenger Experience Requires Inputs from International Experts



- ✈ Airport security experts from Belgium, Morocco, Great Britain, France, Germany, the U.S., Saudi Arabia, Switzerland and Australia provided their expertise.

Experts Reveal the Most Effective Measures That Maintain the Experience at the Same Time



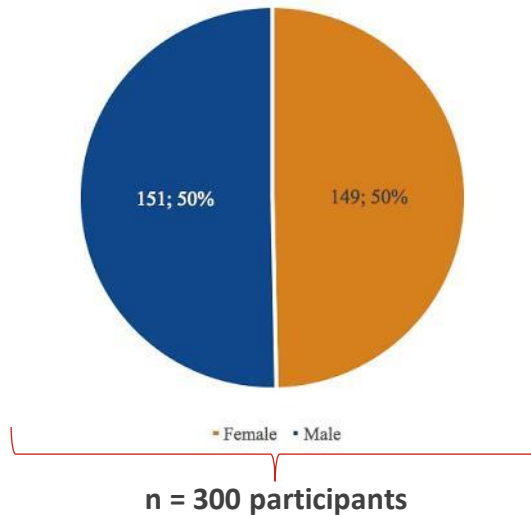
- Applying **non-intrusive processes & leveraging changing passenger habits**, i.e. facilitation & processes that enhance passenger flows and self-services, **supported by state-of-the-art technology**
- **Security by design** (i.e. distances, protective facility set-ups, blast-protection materials and boards etc.), which **brings along additionally required services such as pleasant ambience** (e.g. longer walking distances designed as boulevards), roadways or signage
- **Combination of uniformed and plainclothes behavior detection officers** accompanied by **constant, passive surveillance** and – if applicable – **unpredictable random checks**
- Usage of **family-type dogs** in order to comfort passengers
- **Security awareness training and culture establishment** for the whole organization
- **Cooperation & information exchange**, usage of the *advanced passenger information system (APS)*
- **Remote passenger profiling capabilities**

D. Ryder, E.
Boulby & T.
Sewell, F.
Martin, P.
DiDomenica,
W. Covent,
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Haldimann,
B. Lakhli,
M. Lederer,
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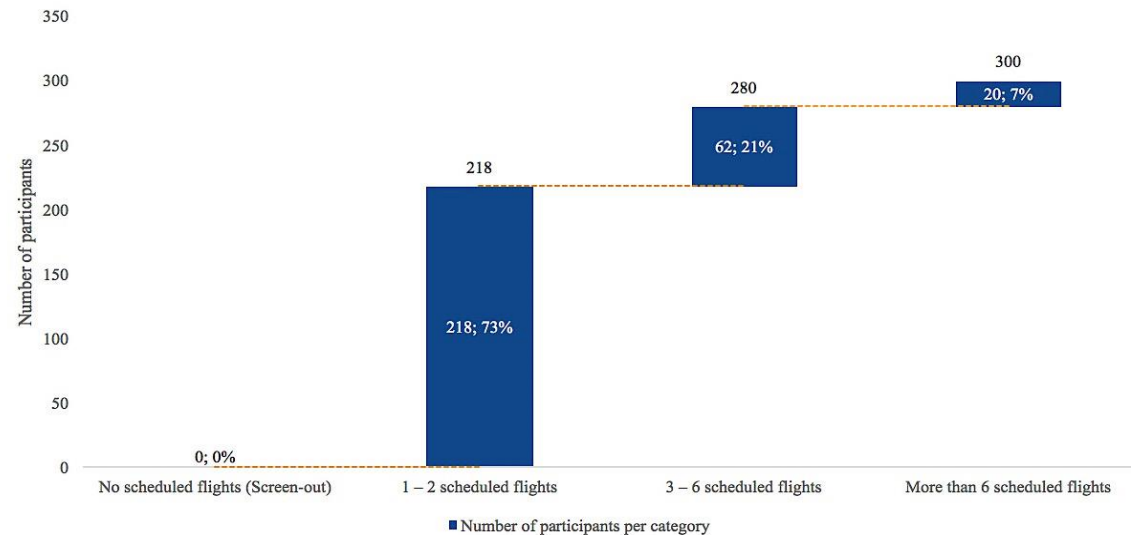
Maintaining the Passenger Experience Requires Inputs from Survey Participants



Q2: What is your sex?



Q4: How many scheduled flights have you taken within the last 12 months?

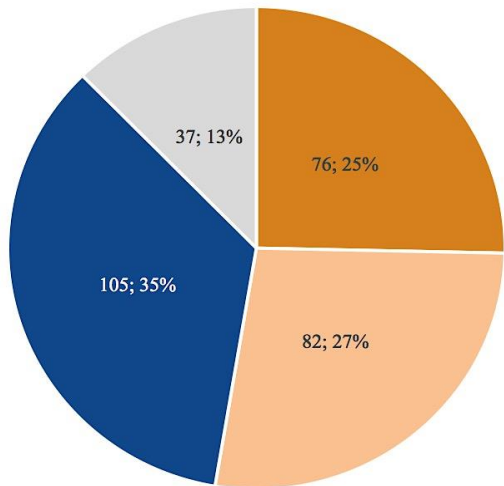


- ➔ **Expert statements and associated hypotheses have been aligned & compared with findings stemming from a Germany-wide online survey:** 300 men and women older than 18 years, representatively distributed considering gender and age, who undertook at least two scheduled flights (leisure and business) within Europe within the last twelve months

The Elderlies Tend to Remain Longer on the Airport's Landside Areas

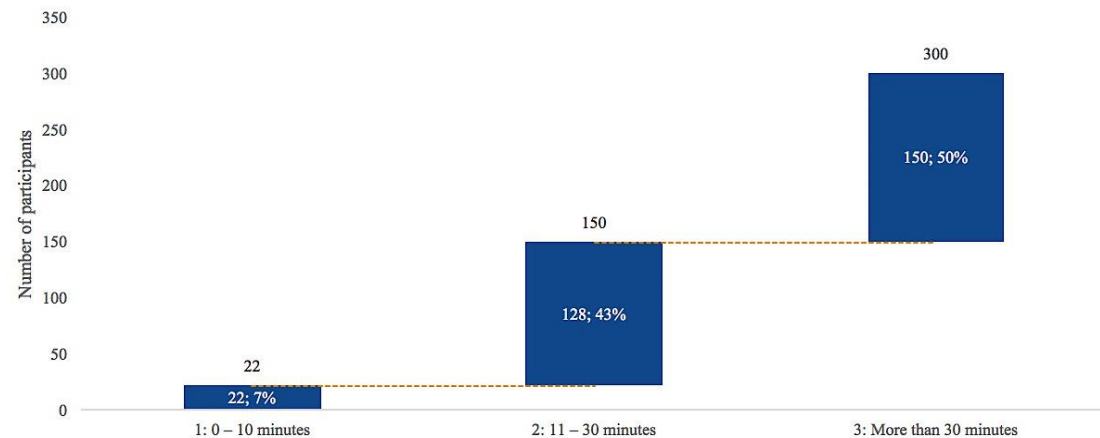


Q1: Distribution of generations



■ Generation Y ■ Generation X ■ Babyboomer ■ 1968er Generation

Q6: When entering an airport with the intention to take a flight – how long do you averagely stay within the public terminal area before passing through the security and passport controls?



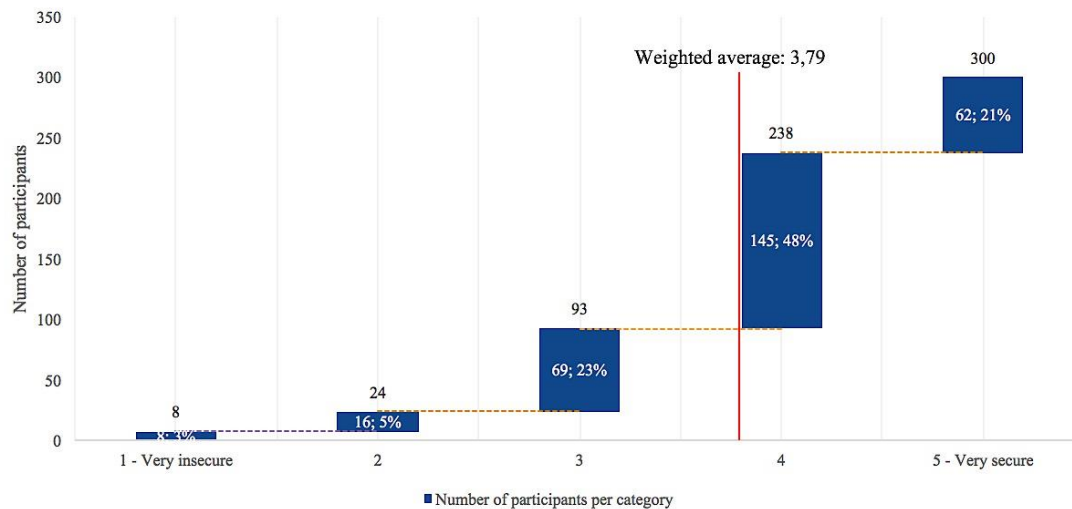
■ Number of participants per category

- ➔ **54% of all participants** have visited the airport's premises **more than 3 times within the last year**
- ➔ The chance of being theoretically prone to landside threats exists, as **43% averagely stay 11 to 30 minutes** within the public spaces and **yet 50%, and thus half of all participants, remain more than 30 minutes**
- ➔ Positive correlation btw. age & length of stay suggests that **especially the elderlies are prone to potential incidents**

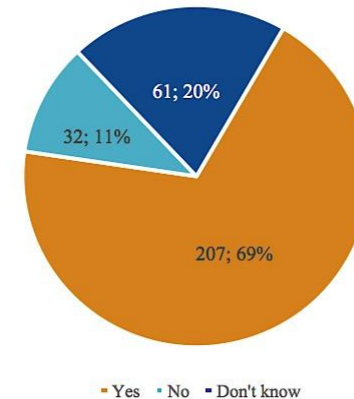
The General Feeling of Security When Entering an Airport Nowadays is Good



Q7: Would you generally claim that you feel secure when entering the publicly accessible area of an airport (before the security checkpoint)?



Q20: Would you as a passenger actively take part in security measures in the form of perception, detection and information transfer of suspicious behavior to generally enhance the airport's security?



- ➔ The overall feeling of security when entering an airport nowadays is **predominantly good (average 3.79)**
- ➔ People feel **most secure directly behind the security checkpoint (average 4.19)** and **least secure directly in front of the terminal**, however not explicitly insecure (**average 3.66**)
- ➔ **69% of all participants do even agree to actively take part in security measures in order to enhance the airport's security**

Measures Need to be Accepted in Order to Maintain the Passenger Experience.



Ranking of examined landside measures with regard to their acceptance, perceived effectiveness, feeling of security and effect on the experience:

		Acceptance of security measure ¹	Perceived effectiveness ²	Secure or insecure? ²	Experience improved or deteriorated? ²
Ranking of landside measure	1	Behavior Detection	Visible Patrols	Visible Patrols	Behavior Detection
	2	Visible Patrols	Random Checks	Camera Surveillance	Camera Surveillance
	3	Camera Surveillance	Behavior Detection	Behavior Detection	Physical Barriers
	4	Random Checks	Camera Surveillance	Random Checks	Visible Patrols
	5	Physical Barriers	Vehicle Checkpoints	Vehicle Checkpoints	Random Checks
	6	Vehicle Checkpoints	Physical Barriers	Physical Barriers	Vehicle Checkpoints
	7	Entrance Checks	Entrance Checks	Entrance Checks	Entrance Checks
	8	Veracity Testing	Veracity Testing	Veracity Testing	Veracity Testing
	9	Lie Detectors	Lie Detectors	Lie Detectors	Lie Detectors

¹ rated on scale 1 (yes) to 3 (don't know)

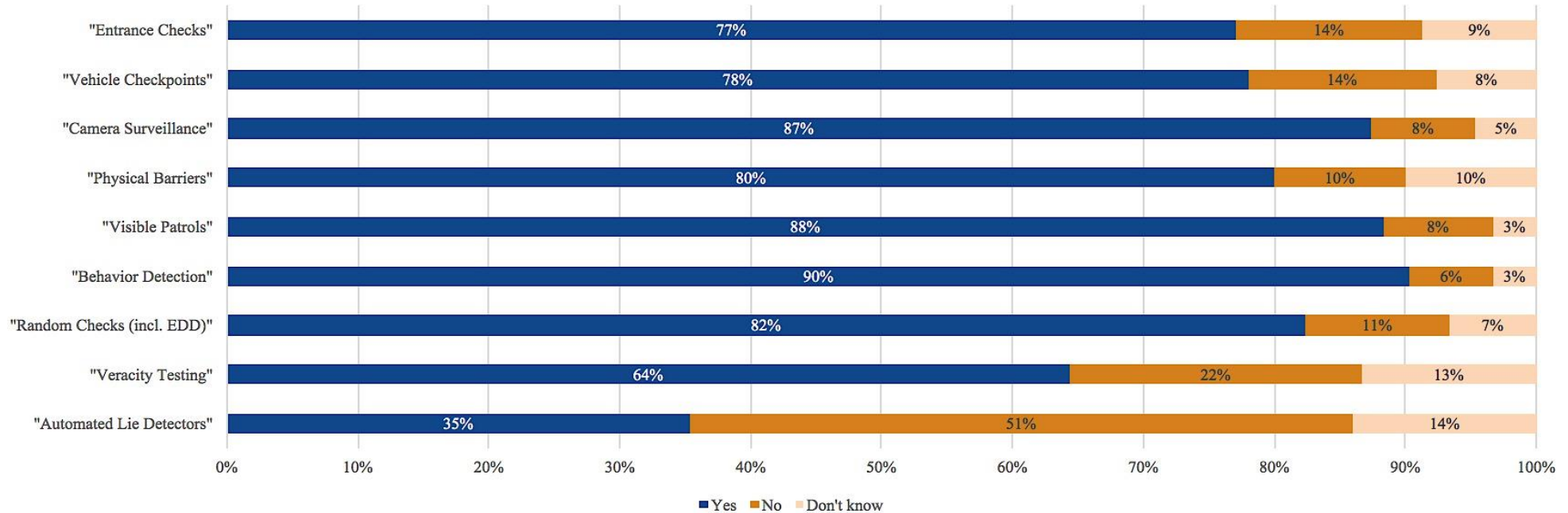
² rated on scale 1 (does not apply) to 5 (applies very strongly)

- ➔ Acceptance is **positively correlated with effectiveness, improvement of experience and perceived security feelings**
- ➔ Acceptance of a measure increases the chance **that the passenger experience is finally enhanced!**
- ➔ **Behavior detection is accepted most and likewise improves the experience to the highest extent**

People are Indeed Risk-Averse and Accept Visible Patrols and Behavior Detection Most

Q2: Do you accept the depicted security measures?

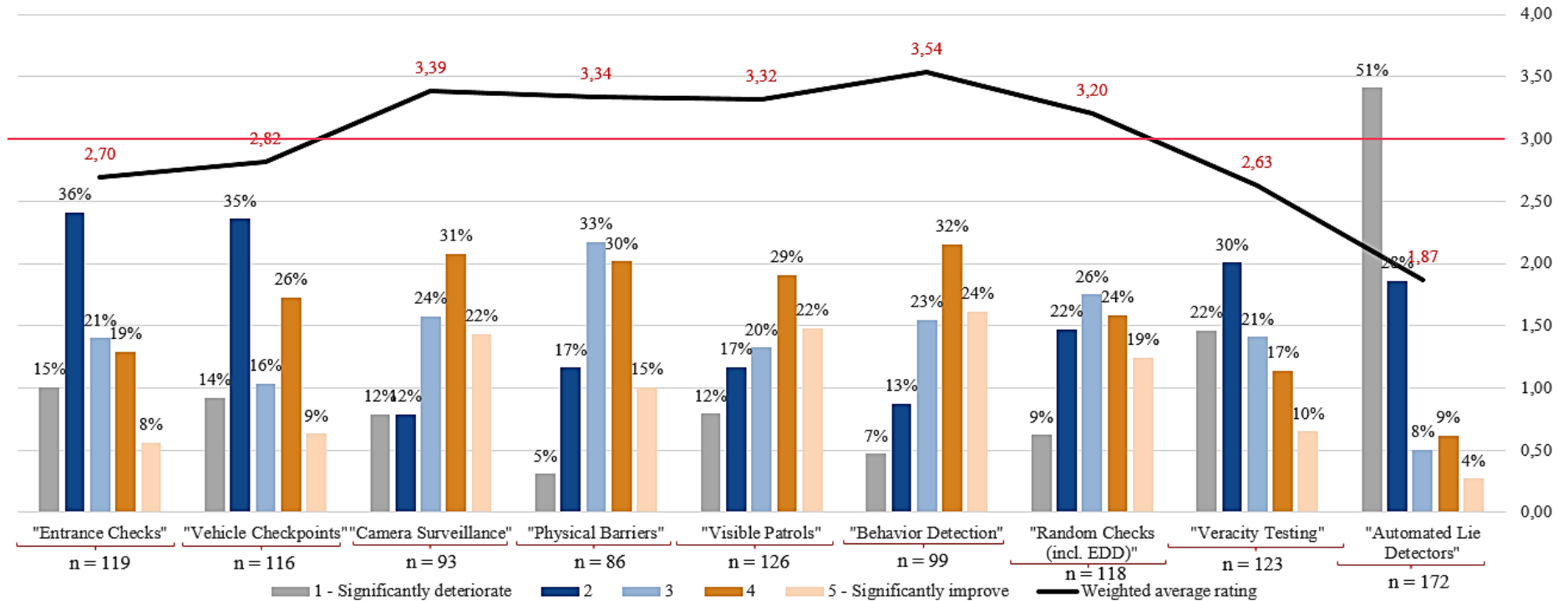
n = 300 for each case



- ➔ Participants accept three measures most: **(1) behavior detection** with 90% affirmation, **(2) visible patrols** with 88% affirmation, **(3) camera surveillance** with 87% affirmation
- ➔ Still strong acceptance holds for **(4) random checks incl. EDD** with 82% affirmation, **(5) barriers and physical structures** with 80% affirmation, **(6) vehicle checkpoints** with 78% affirmation, **(7) terminal entrance checks** with 77% affirmation
- ➔ Slightly behind are **(8) veracity testing** with 64% affirmation and **(9) automated lie detector machines** least with only 35% affirmation

These Measures do Likewise Improve the Passenger Experience Most

Q5: Given that your experience is affected, does it tendentially improve or deteriorate?



- ➔ **Behavior detection is accepted most** and likewise **improves the experience to the highest extent**
- ➔ **Camera Surveillance, physical barriers, visible patrols and random checks also have a positive effect on the Passenger Experience**
- ➔ **Terminal entrance checks, vehicle checkpoints and veracity testing negatively affect the Passenger Experience**
- ➔ **Automated lie detectors would deteriorate the Passenger Experience**

Security Measures are not to Impinge on the Individual's Mobility and Flexibility



Q21: Do you accept the following possible effects of security measures?

No individual traffic anymore in front of terminal

Necessity to use shuttles in order to get to the terminal building

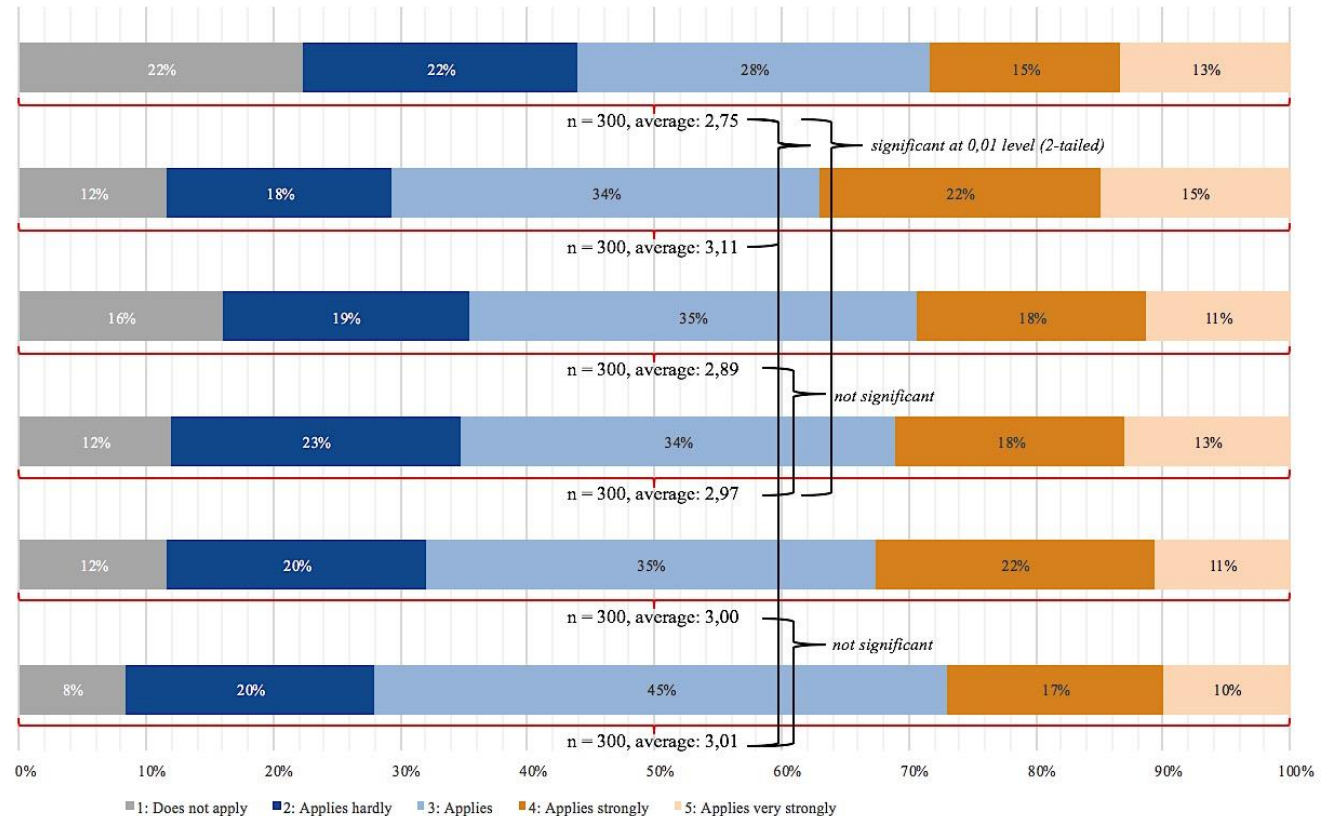
Restriction of parking facilities near to the terminal

You have to arrive significantly earlier at the airport (more than one hour)

The approaches to the terminal are not barrier-free

You need to walk detours when using the airport's areas and premises

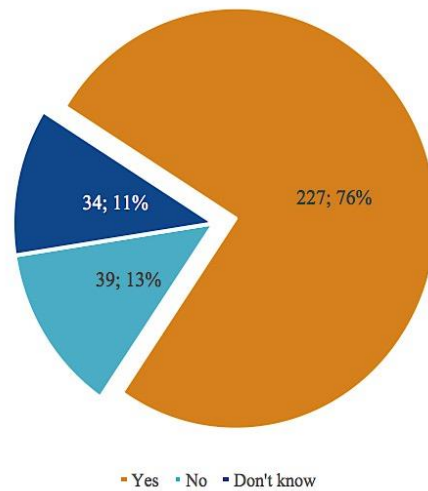
Mean difference significances provided from gap values of 0,15 - 0,20!



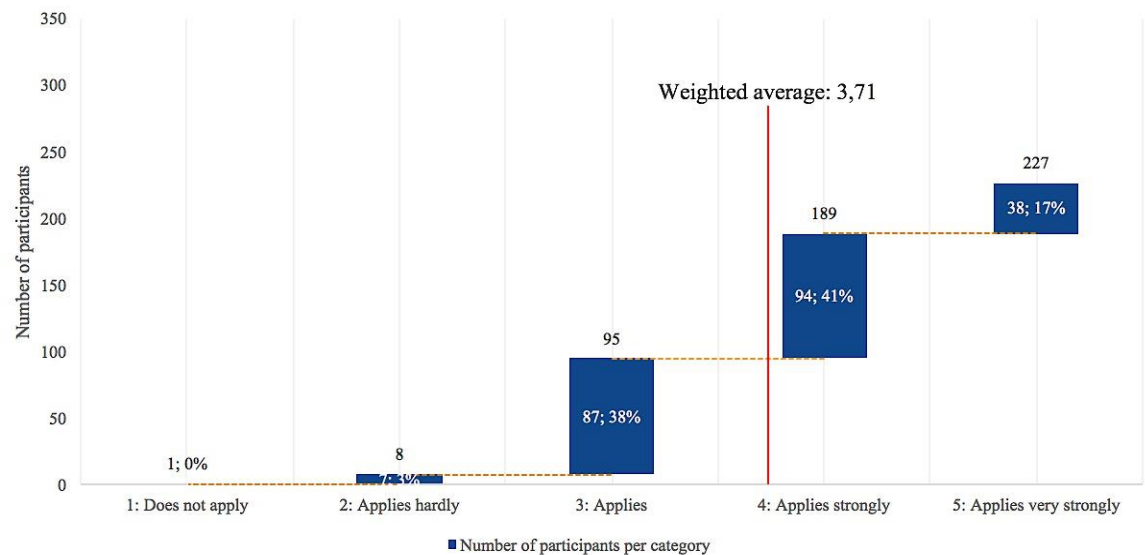
The Explanation of a Measure's Reasons and Benefits Increases the Passengers' Acceptance.



Q22: Does your acceptance change in case the positive impact and meaningfulness of a security measure is proved?

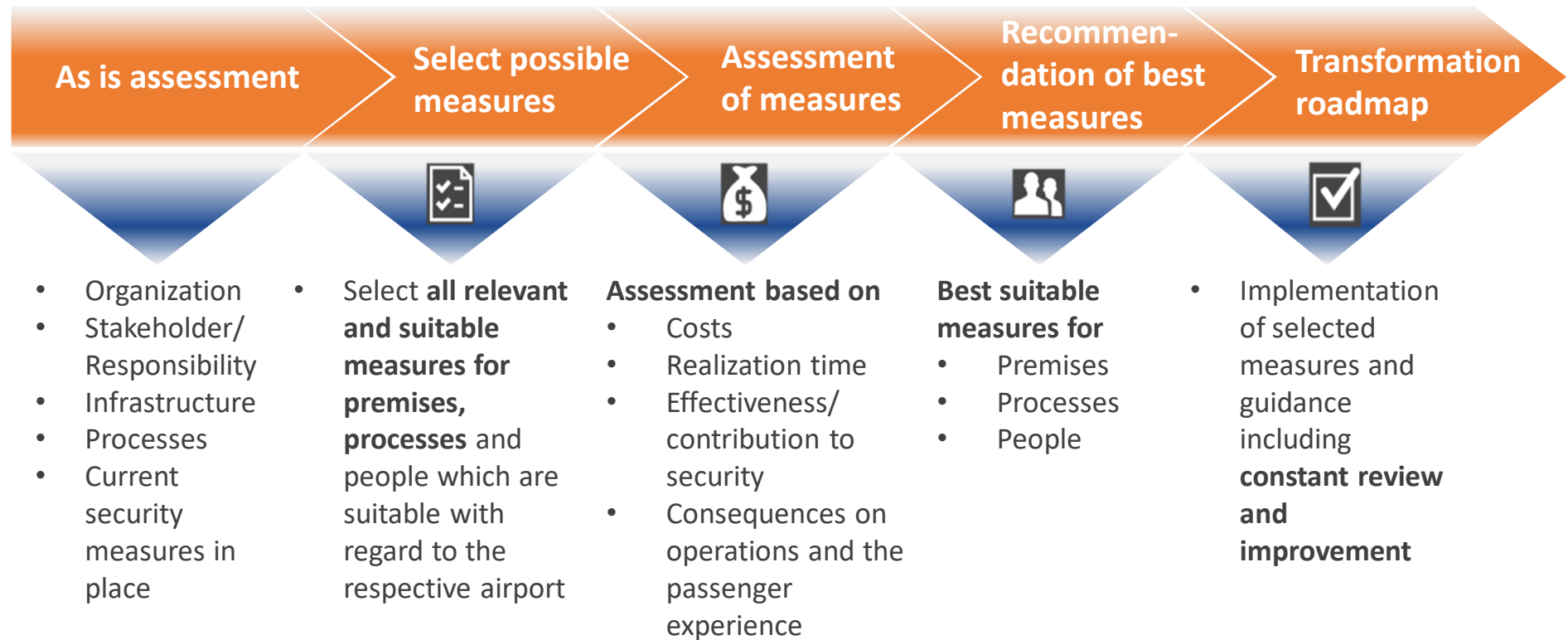


Q23: If yes, does your acceptance increase?



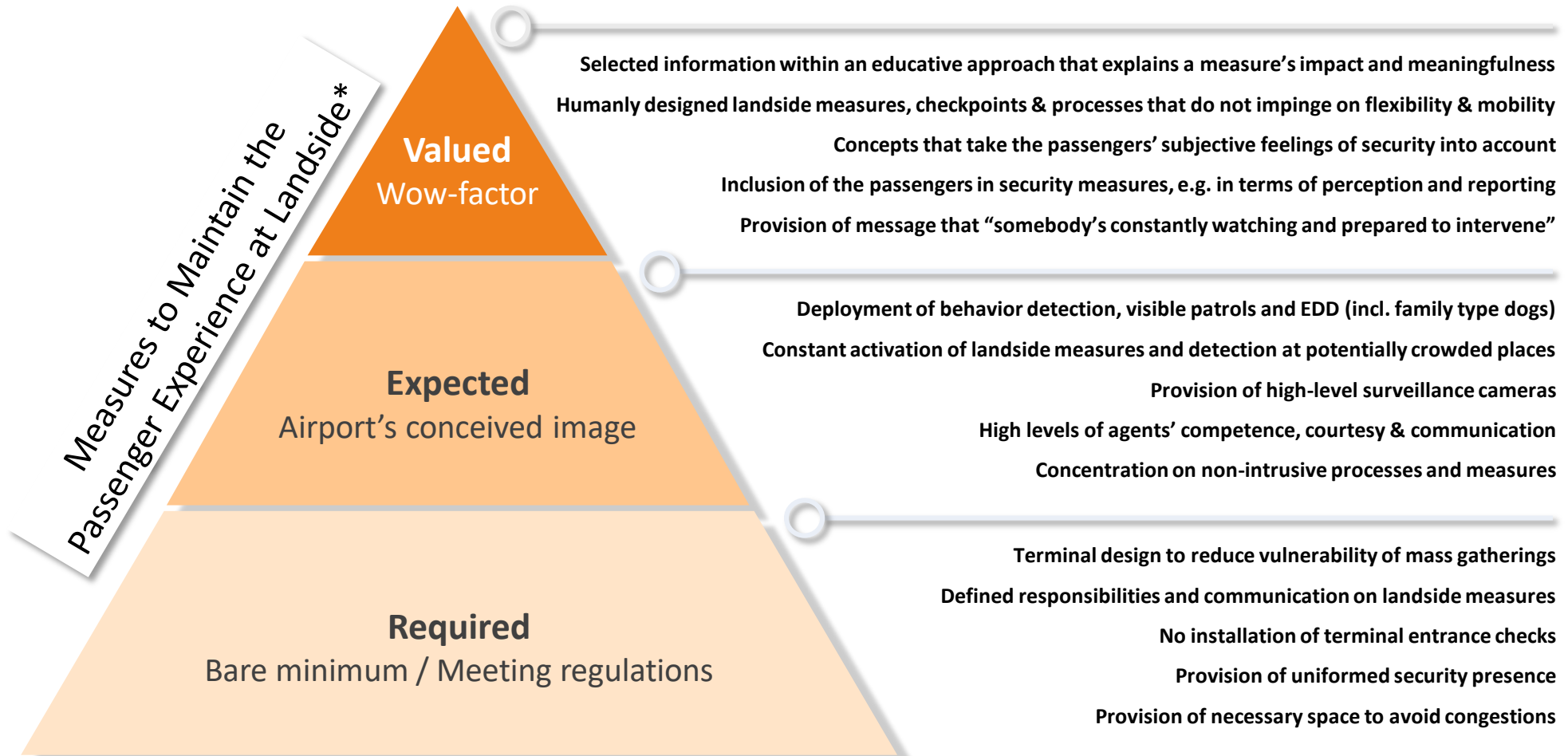
- ➔ **76% of all participants** claim that their **acceptance of a particular security measure changes when its impact and meaningfulness is proved**
- ➔ Given that, the clear majority of **96%** and an associated average value of **3.71** say, that the acceptance increases

Measures Need to be Relevant for the Airport's Specific Requirements



- ➔ Applying a so-called **layered security approach** while **continuously reviewing, redefining, changing & updating the respective security measures**
- ➔ Landside security measures to be **relevant for the airport's specific circumstances and locational originalities**, among others assessed and defined by a **risk assessment group (RAG)**

Landside Measures may be Clustered Along Three Perception Levels



- ➔ Results allow the **compilation of a sample pyramid with regard to valued, expected and required landside measures and initiatives**
- ➔ In general, each and every airport needs to **compile its own pyramid relevant for its individual passengers**

Resulting Recommendations are Clustered Into the 3Ps



	Responsibilities	Premises	Processes	People
Recommendations Part 1	<ul style="list-style-type: none"> ➔ Responsibility to be shared within an interactive, joint & consultative approach and framework ➔ The airport operator takes the lead and the role of the discussion leader ➔ The higher the responsibility share of the airport, the higher the consideration of the passenger experience 	<ul style="list-style-type: none"> ➔ Design to reduce the general likelihood and vulnerabilities associated with mass gatherings, crowds and queues ➔ The security line between the airport's air- and landside to be moved as far as possible to the front ➔ Installed longer distances shall be pleasantly designed for example in some form of boulevards 	<ul style="list-style-type: none"> ➔ Procedures to assess psychological consequences to people prior to the execution of measures ➔ Airports are well-advised to concentrate on police patrols and camera surveillance backed up by state-of-the-art technology ➔ In general, uniformed officers are more accepted than plainclothes officers 	<ul style="list-style-type: none"> ➔ Communication to include security information and customer service, educative approach that explains meaningfulness and benefits of security measures ➔ Consultation with experts on hospitality to benefit the passenger experience ➔ EDD patrols incl. family type of dogs as add-on to the experience

Resulting Recommendations are Clustered Into the 3Ps



Recommendations Part 2

Responsibilities	Premises	Processes	People
<ul style="list-style-type: none"> ➔ Application of joint threat assessments to include each and every stakeholder at the airport ➔ Airport operator to share responsibility internally among the departments of security and operations ➔ Airports to implement surveillance processes with KPIs that balance passenger experience & landside security 	<ul style="list-style-type: none"> ➔ Overall easy wayfinding, clear signage and provision of information ➔ Airports shall install high-definition cameras purposefully visible ➔ Design in order to facilitate passenger flow, in particular for elderly travelers at the landside, due to their tendency to commonly remain longer within the public spaces 	<ul style="list-style-type: none"> ➔ Behavior detection and random checks to substitute terminal entrance checks ➔ Permanent activation of measures to be especially considered in busy areas ➔ Skimp on measures that induce on people's time, flexibility, mobility, integrity and anonymity ➔ Processes to commonly revolve around the reduction of waiting and process times 	<ul style="list-style-type: none"> ➔ Addressing people by means of basic, non-aggressive, non-intrusive and customer-oriented questions ➔ Defined competences and ways to approach customers to guarantee execution based upon objectivity as opposed to biased & racial profiling ➔ Passengers to be included in some security awareness program given verification of integrity

Mind Subjective Effects of Measures on the Passengers to Maintain Their Experience



- ➔ Landside security to be **implemented with regard to psychological effects on passengers**
- ➔ **International industry experts reveal non-intrusive processes, the leverage of changing passenger habits, *Security by Design*, as well as a combination of uniformed and plainclothes behavior detection officers accompanied by constant, **passive surveillance** as the most effective measures that maintain the experience at the same time**
- ➔ Passengers subjectively associate losses to additional security measures which concern **interventions into their flexibility, comfort, anonymity and integrity**
- ➔ **The higher the acceptance of a security measure, the higher the corresponding improvement of the experience**
- ➔ **Consequences related to losses of flexibility, anonymity and integrity are accepted least**
- ➔ An approach to win customers' confidence is the **provision of visible police patrols and behavior detection, the installation of not too sophisticated technical solutions such as lie detectors as well as the allocation of selected information on benefits and meaningfulness of particular measures**
- ➔ Airports to skimp on **measures that induce on people's time and mobility**



Thank you very much for your attention!

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